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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): BARUCH, Yehuda EXAMINER: Not yet known
SERIAL NO.: 10/653,973 GROUP ART UNIT: Not yet known
FILED: September 4, 2003 ATTORNEY DOCKET No.: P-5475-US
FOR: THEFT PROTECTION DEVICE FOR A WHEELED TRAILERS

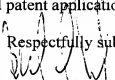
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Sir:

Applicant(s) hereby submits a certified copy of the Israeli Application No. 153134 filed November 27, 2002 for the above identified patent application.

Respectfully submitted,



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Dated: October 27, 2003

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Application For Patent - בקשה לפטנט

מספר: Number	153134
תאריך: Date	27-11-2002
הוקדם/נדחה Ante/Post-dated	

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התקן למניעת גניבת נגרים

(בעברית)
(Hebrew)

THEFT PROTECTION DEVICE FOR A WHEELED TRAILERS

(באנגלית)
(English)

בבקשת חלוקה - Application of Division	בבקשת פטנט מוסף - Application for Patent Addition	דרישה דין קדימה Priority Claim		
מבקשת פטנט from Application	לבקשה/פטנט to Patent/Appl.	מספר/סימן Number/Mark	תאריך Date	מדינת האגוד Convention Country
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POA: filed in case P.A.78404 המנוח למסירת מסמכים בישראל Address for Service in Israel		היום 26 לחודש נובמבר שנת 2002 This 26 of November of the year 2002		
איתן, פרל, לצר וכחן-צדק עורכי דין, פטנטים ונוטריון רח' שנקר 7, הרצליה 46725		לשימוש הלשכה For Official Use		
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**THEFT PROTECTION DEVICE FOR A
WHEELED TRAILERS**

התקן למניעת גניבת נגררים

The present invention relates to vehicle theft prevention.

More particularly, the invention provides a pneumatic method of preventing the theft of drawn load carriers such as wagons/trailers and semitrailers. The arrangement could also be mounted on lorries.

Car theft is a widely recognized problem, and many known devices are on the market affording car owners a lesser or greater degree of security. Less well known is the fact that also heavy vehicles, even those not provided with a motor, are being stolen. A truck trailer or a semitrailer can be stolen by anyone operating a truck tractor. The financial loss and inconvenience suffered by a business as a result of theft is likely to be at least as severe as the loss of a car. However, most of the devices known against car theft are inapplicable to the protection of heavy wheeled vehicles. Clearly such theft prevention devices as gear locks, steering locks, engine immobilizers, door locks and many others are completely irrelevant for the protection of drawn heavy load carriers.

With regard to a semitrailer, a completely mechanical device is known which encompasses the fifth wheel coupling pin and is secured thereon by a cylinder lock, thus preventing connection of a truck tractor. The device has a number of disadvantages, firstly not being suitable for trailer wagons and secondly being difficult to apply and remove and becoming soiled with grease which is likely to dirty the driver. Many truck drivers prefer taking the risk of theft rather than assembling this device.

An improvement in the field is disclosed by Schulz in US Patent No. 6,070,688 which describes a mechanical, pneumatically operated mechanism wherein a protruding latching device can be moved and held in proximity to the coupling pin to block access of the fifth wheel. The device involves substantial mechanical changes and is suitable only for semitrailers.

Blehi III proposes a system - also applicable only to semitrailers - which prevents retraction of the landing gear, as seen in US Patent 6,141,997. The system includes adding a retractable non-rotating gear segment to mesh with existing gearing used for retraction of the two support legs or struts. Mechanical modifications of this type are

It is therefore one of the objects of the present invention to obviate the disadvantages of prior art locking devices and to provide a device which is suitable for use to protect both semitrailers and truck trailers.

It is a further object of the present invention to provide a pneumatically-operated locking device which is convenient and easy for use.

Yet a further object of the present invention is to provide a low-cost totally pneumatic system which can be supplied for retrofit at a lower cost than previously known devices.

Yet a further object of the invention is to provide a theft protection device which, if damaged by a person attempting unauthorized removal of the load carrier, will nevertheless prevent theft thereof.

The present invention achieves the above objects by providing a wheeled load carrier of the type fitted with spring-closed pneumatically-opened brakes, the carrier being connectable to a motorized truck section, said carrier having an anti-theft protection device, which when deployed inhibits the unlocking of air-release spring-operated wheel brakes of said carrier, said device including a lockable air valve inserted into a compressed air line connecting a source of compressed air to said brakes, closure of said valve preventing air passage for release of said brakes and opening of said valve allowing passage for compressed air to release said brakes.

In a preferred embodiment of the present invention there is provided a carrier wherein said valve is solenoid operated in both directions by an electric pulse and is mounted on said carrier in a hidden location.

In a most preferred embodiment of the present invention there is provided a conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing

- * a two-way lockable air valve with valve attachment hardware ;
- * tubing for connecting said air valve between an existing air inlet fitting and pneumatically operated brakes of said carrier;
- * tube fitting hardware; and

* installation instructions.

Yet further embodiments of the invention will be described hereinafter.

It will thus be realized that the basic embodiment of the novel device of the present invention serves to prevent theft of valuable vehicles at a cost which is little more than that of a lockable two-way air valve and the corresponding air pressure tubing. The valve is easy to operate by a person having an appropriate key, and can be positioned openly at the side of the vehicle, or enclosed in a lockable steel case attached to the carrier, or disposed in a hidden location. Aside from lock breakage, any type of damage done to the system during a theft attempt will merely cause air leakage and consequently further difficulty in releasing the air-opened spring-closed road wheel brakes. There is no need for any mechanical modification of the load carrier, and the system is applicable to all vehicles, whether semitrailer or truck trailer, being equipped with wheel brakes of the type described.

Various degrees of security can be provided. In some circumstances it will be sufficient that a key is needed to operate the air valve. In other circumstances the valve is solenoid operated in a hidden location, and can be operated only by a special electrical connection and a generated electric pulse provided by the authorized truck tractor.

It will be noted that the brakes referred to are air opened through a distributor and pressure booster units. These items will not be described in detail as no novelty is claimed regarding these prior-art components.

The invention will now be described further with reference to the accompanying drawings, which represent by example preferred embodiments of the invention. Structural details are shown only as far as necessary for a fundamental understanding thereof. The described examples, together with the drawings, will make apparent to those skilled in the art how further forms of the invention may be realized.

In the drawings:

FIG. 1 is a diagrammatic view of a preferred embodiment of the locking device according to the invention;

FIG. 2 is an elevational view of an embodiment as applied to a semitrailer;

FIG. 3 is a schematic diagram of an electro-pneumatic embodiment;

FIG. 4 is a schematic view of a retrofit kit;

and

FIG. 5 is a perspective view of a further embodiment of a retrofit kit.

There is seen in FIG. 1 a wheeled load carrier in the form of a truck trailer load carrier 10 provided with spring-closed pneumatically-opened brakes 12. The carrier 10 is connectable to a motorized truck section (not shown), and is fitted with an anti-theft protection device 14. When deployed, the anti-theft device 14 prevents unlocking of the wheel brakes 12, as the device 14 includes a lockable 2-way air valve 16 which prevents air pressure from the compressed air inlet coupling 18 reaching the brakes 12.

The lockable valve 16 is manually operated and may be positioned at the side of the carrier 10 for convenient access.

The valve 16 is inserted into a compressed air line 20 connecting the coupling 18 to the brakes 12. Closure of the valve 16 prevents air reaching the distributor 22 and the pressure boosters 24, immobilizing the carrier. Opening the valve 16 allows the passage of compressed air to release the brakes 12 so that the carrier can be moved.

With reference to the rest of the figures, similar reference numerals have been used to identify similar parts.

Referring now to FIG. 2, there is seen an embodiment where the carrier is a semitrailer 26 and the compressed air line 28 in which the valve is inserted is the MAXI air line.

In the present embodiment the air valve 30 is mounted inside a lockable steel box 32 resistant to forcible opening. Thus a non-lockable air valve 30 may optionally be used.

FIG. 3 schematically shows a wheeled load carrier 34 coupled to a motorized truck section or tractor 36 wherein a two-way valve 38 is solenoid 40 operated in both directions by an appropriate electric pulse. The valve 38 is advantageously mounted on the carrier 34 in a hidden location. Double solenoid pilots 40 are fitted for momentary operation.

The valve can be operated only through a special electrical connection 42 and a generated electric pulse is sent from the authorized truck section 36 through this connection 42.

For even further security, the solenoids are arranged to require a pulse of a voltage 110V or 220V substantially higher than the voltage (24V) normally provided by the truck battery 44. For this purpose the truck tractor 36 is provided with a DC-DC step-up transformer 46. Thus an attempted theft using electric power normally available on any truck tractor will not open the valve 38. The valve 38 need not be lockable, although if desired the push buttons 48 in the tractor 36 used to release the electrical pulse may be locked.

Seen in FIG. 4 is a conversion kit 50 for retrofitting an anti-theft protection device to a carrier of the type illustrated in FIG. 1.

The kit 50 contains the following items:

A two-way lockable air valve 16 with keys and valve attachment hardware 52.

Tubing 53 for connecting the air valve 16 between an existing air inlet coupling and pneumatically operated brakes of the carrier.

Tube fitting hardware 54 as needed.

Installation instructions 56.

Referring now to FIG. 5, there is depicted a further conversion kit 58 for retrofitting an anti-theft protection device of the type seen in FIG.2 to a carrier.

The kit components listed below are almost totally pre-assembled, to enable fast installation.

An openable, lockable steel case 32 attachable to the carrier by means of a flange 64 is provided for this purpose. The flange 64 can be used either for screws or for welding.

A two-way air valve 30 contained in the case 32.

Two tubing lengths 60 extending through the case 32 each ready connected at one end to the air valve 30.

Tube fitting hardware 54.

Installation instructions 62.

Installation instructions 62.

The scope of the described invention is intended to include embodiments coming within the meaning of the following claims. The foregoing examples illustrate useful forms of the invention, but are not to be considered as limiting its scope, such as location of the valve and its deployment, and the use on other vehicles, as those skilled in the art will readily be aware that additional variants and modifications of the invention can be formulated without departing from the meaning of the following claims.

WE CLAIM:

1. A wheeled load carrier or lorry provided with spring-closed pneumatically-opened brakes, said carrier being connectable to a motorized truck section, said carrier or lorry having an anti-theft protection device, which when deployed inhibits the unlocking of air-release spring-operated wheel brakes of said carrier, said device including a lockable air valve inserted into a compressed air line connecting a source of compressed air to said brakes, closure of said valve preventing air passage for release of said brakes and opening of said valve allowing passage for compressed air to release said brakes.
2. The carrier as claimed in claim 1, wherein said compressed air line is the MAXI air line.
3. The carrier as claimed in claim 1, wherein said air valve is mounted inside a lockable steel box resistant to forcible opening.
4. The carrier as claimed in claim 1, wherein said lockable valve is manually operated and is positioned for convenient access.
5. The carrier as claimed in claim 1, wherein said valve is electrically operated by a solenoid or an electric motor in both directions, and is mounted on said carrier in a hidden location.
6. The carrier as claimed in claim 1, being a semitrailer.
7. A carrier with an anti-theft protection device substantially as described hereinbefore and with reference to the accompanying drawings.
8. A conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing
 - * a two-way lockable air valve with valve attachment hardware ;

- * tube fitting hardware; and
- * installation instructions.

9. A conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing

- * an openable, lockable steel case attachable to said carrier;
- * a two-way air valve contained in said case;
- * two tubing lengths extending through said case each ready connected at one end to said air valve;
- * tube fitting hardware; and
- * installation instructions.

10. A conversion kit for retrofitting an anti-theft protection device to a carrier, substantially as described hereinbefore and with reference to the accompanying drawings.

For the Applicant

EITAN, PEARL, LATZER & COHEN-ZEDEK

Advocates, Patent Attorneys & Notaries

by: 

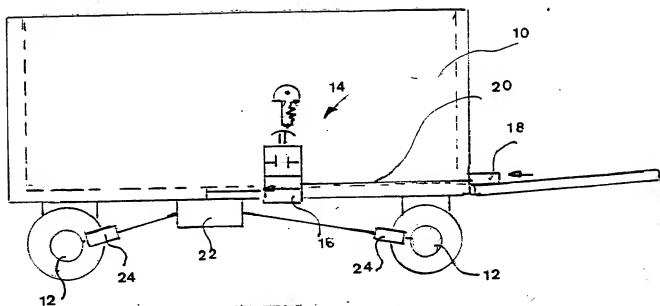
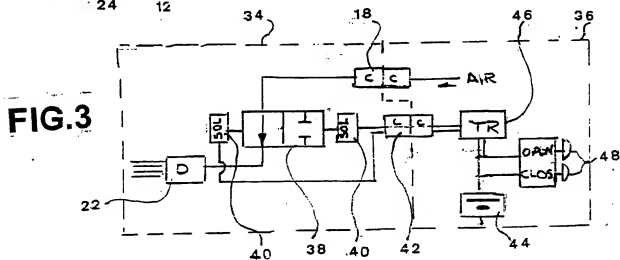
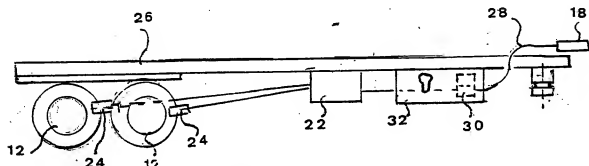
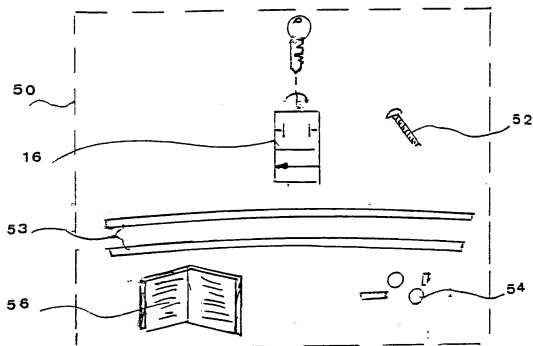
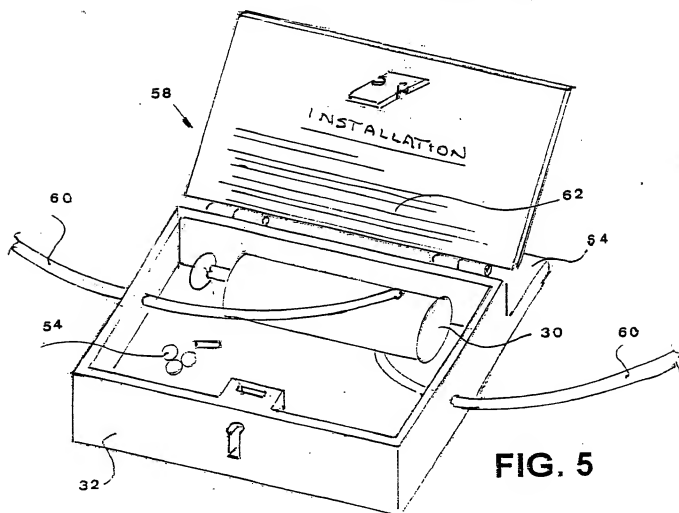


FIG. 1



**FIG. 4****FIG. 5**

Referring now to FIG. 5, there is depicted a further conversion kit 58 for retrofitting an anti-theft protection device of the type seen in FIG. 2 to a carrier.

The kit components listed below are almost totally pre-assembled, to enable fast installation.

An openable, lockable steel case 32 attachable to the carrier by means of a flange 64 is provided for this purpose. The flange 64 can be used either for screws or for welding.

A two-way air valve 30 contained in the case 32.

Two tubing lengths 60 extending through the case 32 each ready connected at one end to the air valve 30.

Tube fitting hardware 54.

Installation instructions 62.

FIG. 6 illustrates schematically a valve which is so designed to be automatically activated. The valve 38 comprises a cylindrical tubular housing 64 having an inlet port 18 and outlet port 20, an inner core piston 66 urged by spring 68 and to which a solenoid 40 is connected. There is further provided a by-pass passage 70. The inner core piston is adapted to pivot and axially move urged by spring 68. The valve is inserted into the compressed air line of the carrier. Activation of solenoid 40 would bring core piston 66 to its "open" position as seen. The air pressure would enter by-pass 70 and hold said core 66 in its position. Alternatively to by-pass 70 an auxiliary valve could be used.

Disconnecting the air line would release the pressure consequently spring 68 will urge core 66 to a position closing passage 19 preventing air pressure reaching the brakes.

Turning now to FIGS. 7 and 8, and referring again to FIG. 1, there is seen a spring-locked electrically-opened pneumatic theft protection lock 66 for a truck trailer load carrier 10 provided with spring-closed pneumatically-opened brakes 12. The lock 66 is operatively connected to the vehicle handbrake system and is connected to the piping upstream of the air distributor 22.

A movable double piston 68 having a first body 70 and a rigidly connected second body 72 is free to move inside an air cylinder 74. The air piston bodies 70, 72 are interconnected by a piston rod 75 which allows air flow (in FIG. 7) between the fittings 76, 78. O rings 73 are fitted to the double piston 68 as needed to prevent leakage. The air line 77a, 77b necessary for releasing the vehicle brakes 12 is divided

by and fed through the cylinder 74. In the locked state illustrated in FIG. 7, air can not pass from inlet fitting 76 to the outlet fitting 78 because the nozzle 79 is blocked by the second body 72 of the piston 68. The piston 68 is retained in its blocking position by a light spring 80. Although an additional path 82 is provided whereby compressed air can enter the cylinder 74, path 82 is blocked by the spool 84 of a key-operated solenoid 86. Thus the spring 80 continues to retain the double piston 68 in its blocking position, no air can pass from inlet 76 to outlet 78 and the vehicle brakes 12 remain locked.

An authorized driver in possession of a key 88 will energize the solenoid 86 when wishing to connect to the load carrier 10. Operation of the solenoid 86 by means of switch 90 and electric power source 96 moves the spool 84 away from the nozzle 92 to allow air to flow through the path 82 and apply pressure to the whole top area of the first body 70 of the piston. Such pressure forces the double piston to move against the urging of the spring 80, as seen in FIG. 8. There is now a clear passage for compressed air to flow from the inlet fitting 76 around the piston rod 75 and to the outlet fitting 78, thus completing the air line and allowing release of the vehicle brakes 12.

When parking the vehicle the brake lock is reset to the configuration seen in FIG. 7. Release of the solenoid allows the light solenoid return spring 94 to move the spool 84 back onto the nozzle 92, thus closing air passage 82. As air can drain into passage 98, air pressure above the piston 68 falls. Consequently, with the help of spring 80, the piston moves in the direction of the solenoid to again block the air inlet nozzle 78. As compressed air becomes unavailable for brake release, the load carrier 10 cannot be removed by anyone unauthorized persons.

The scope of the described invention is intended to include embodiments coming within the meaning of the following claims. The foregoing examples illustrate useful forms of the invention, but are not to be considered as limiting its scope, such as location of the valve and its deployment, and the use on other vehicles, as those skilled in the art will readily be aware that additional variants and modifications of the invention can be formulated without departing from the meaning of the following claims.

WE CLAIM:

1. A wheeled load carrier or lorry provided with spring-closed pneumatically-opened brakes, said carrier being connectable to a motorized truck section, said carrier or lorry having an anti-theft protection device, which when deployed inhibits the unlocking of air-release spring-operated wheel brakes of said carrier, said device including a lockable air valve inserted into a compressed air line connecting a source of compressed air to said brakes, closure of said valve preventing air passage for release of said brakes and opening of said valve allowing passage for compressed air to release said brakes.
2. The carrier as claimed in claim 1, wherein said compressed air line is the MAXI air line.
3. The carrier as claimed in claim 1, wherein said air valve is mounted inside a lockable steel box resistant to forcible opening.
4. The carrier as claimed in claim 1, wherein said lockable valve is manually operated and is positioned for convenient access.
5. The carrier as claimed in claim 1, wherein said valve is electrically operated by a solenoid or an electric motor in both directions, and is mounted on said carrier in a hidden location.
6. The carrier as claimed in claim 1, wherein said valve is automatically activated when the air line is disconnected.
7. A spring-locked electrically-opened pneumatic theft protection air valve lock of claim 1 for a truck trailer load carrier which comprises a movable double piston having a first body and a second body free to move inside an air cylinder, said piston bodies are interconnected by a piston rod, o rings are fitted to the piston to prevent air leakage, a spring is disposed underneath and within said piston and a solenoid at the opposite side, in and outlet ports are provided in said cylinder.

quite expensive when supplied as a retrofit item. Furthermore not all semitrailers have the same type of strut gear mechanism which complicates the supply of a retrofit kit.

It is therefore one of the objects of the present invention to obviate the disadvantages of prior art locking devices and to provide a device which is suitable for use to protect both semitrailers and truck trailers.

It is a further object of the present invention to provide a pneumatically-operated locking device which is convenient and easy for use.

A further object of the present invention is to provide a low-cost totally pneumatic system which can be supplied for retrofit at a lower cost than previously known devices.

Yet a further object of the invention is to provide a theft protection device which, if damaged by a person attempting unauthorized removal of the load carrier, will nevertheless prevent theft thereof.

Finally it is an object of the invention to provide a theft protection device which could be automatically activated, if so requested.

The present invention achieves the above objects by providing a wheeled load carrier of the type fitted with spring-closed pneumatically-opened brakes, the carrier being connectable to a motorized truck section, said carrier having an anti-theft protection device, which when deployed inhibits the unlocking of air-release spring-operated wheel brakes of said carrier, said device including a lockable air valve inserted into a compressed air line connecting a source of compressed air to said brakes, closure of said valve preventing air passage for release of said brakes and opening of said valve allowing passage for compressed air to release said brakes.

In a preferred embodiment of the present invention there is provided a carrier wherein said valve is solenoid operated in both directions by an electric pulse and is mounted on said carrier in a hidden location.

In a most preferred embodiment of the present invention the device is automatically activated when the air pressure is released from the system.

In a further most preferred embodiment of the present invention there is provided a conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing

- * a two-way lockable air valve with valve attachment hardware ;
- * tubing for connecting said air valve between an existing air inlet fitting and pneumatically operated brakes of said carrier;
- * tube fitting hardware; and
- * installation instructions.

Yet further embodiments of the invention will be described hereinafter.

It will thus be realized that the basic embodiment of the novel device of the present invention serves to prevent theft of valuable vehicles at a cost which is little more than that of a lockable two-way air valve and the corresponding air pressure tubing. The valve is easy to operate by a person having an appropriate key, and can be positioned openly at the side of the vehicle, or enclosed in a lockable steel case attached to the carrier, or disposed in a hidden location. Aside from lock breakage, any type of damage done to the system during a theft attempt will merely cause air leakage and consequently further difficulty in releasing the air-opened spring-closed road wheel brakes. There is no need for any mechanical modification of the load carrier, and the system is applicable to all vehicles, whether semitrailer or truck trailer, being equipped with wheel brakes of the type described.

Various degrees of security can be provided. In some circumstances it will be sufficient that a key is needed to operate the air valve. In other circumstances the valve is solenoid operated in a hidden location, and can be operated only by a special electrical connection and a generated electric pulse provided by the authorized truck tractor. The air valve control could be designed such that the mere disconnecting of air pressure system will activate the device.

It will be noted that the brakes referred to are air opened through a distributor and pressure booster units. These items will not be described in detail as no novelty is claimed regarding these prior-art components.

The invention will now be described further with reference to the accompanying drawings, which represent by example preferred embodiments of the invention.

Structural details are shown only as far as necessary for a fundamental understanding thereof. The described examples, together with the drawings, will make apparent to those skilled in the art how further forms of the invention may be realized.

In the drawings:

FIG. 1 is a diagrammatic view of a preferred embodiment of the locking device according to the invention;

FIG. 2 is an elevational view of an embodiment as applied to a semitrailer;

FIG. 3 is a schematic diagram of an electro-pneumatic embodiment;

FIG. 4 is a schematic view of a retrofit kit;

and

FIG. 5 is a perspective view of a further embodiment of a retrofit kit.

FIG. 6 is a schematic illustration of a device which is automatically activated.

There is seen in FIG. 1 a wheeled load carrier in the form of a truck trailer load carrier 10 provided with spring-closed pneumatically-opened brakes 12. The carrier 10 is connectable to a motorized truck section (not shown), and is fitted with an anti-theft protection device 14. When deployed, the anti-theft device 14 prevents unlocking of the wheel brakes 12, as the device 14 includes a lockable 2-way air valve 16 which prevents air pressure from the compressed air inlet coupling 18 reaching the brakes 12.

The lockable valve 16 is manually operated and may be positioned at the side of the carrier 10 for convenient access.

The valve 16 is inserted into a compressed air line 20 connecting the coupling 18 to the brakes 12. Closure of the valve 16 prevents air reaching the distributor 22 and the pressure boosters 24, immobilizing the carrier. Opening the valve 16 allows the passage of compressed air to release the brakes 12 so that the carrier can be moved.

With reference to the rest of the figures, similar reference numerals have been used to identify similar parts.

Referring now to FIG. 2, there is seen an embodiment where the carrier is a semitrailer 26 and the compressed air line 28 in which the valve is inserted is the MAXI air line.

In the present embodiment the air valve 30 is mounted inside a lockable steel box 32 resistant to forcible opening. Thus a non-lockable air valve 30 may optionally be used.

FIG. 3 schematically shows a wheeled load carrier 34 coupled to a motorized truck section or tractor 36 wherein a two-way valve 38 is solenoid 40 operated in both directions by an appropriate electric pulse. The valve 38 is advantageously mounted on the carrier 34 in a hidden location. Double solenoid pilots 40 are fitted for momentary operation.

The valve can be operated only through a special electrical connection 42 and a generated electric pulse is sent from the authorized truck section 36 through this connection 42.

For even further security, the solenoids are arranged to require a pulse of a voltage 110V or 220V substantially higher than the voltage (24V) normally provided by the truck battery 44. For this purpose the truck tractor 36 is provided with a DC-DC step-up transformer 46. Thus an attempted theft using electric power normally available on any truck tractor will not open the valve 38. The valve 38 need not be lockable, although if desired the push buttons 48 in the tractor 36 used to release the electrical pulse may be locked.

Seen in FIG. 4 is a conversion kit 50 for retrofitting an anti-theft protection device to a carrier of the type illustrated in FIG. 1.

The kit 50 contains the following items:

A two-way lockable air valve 16 with keys and valve attachment hardware 52.

Tubing 53 for connecting the air valve 16 between an existing air inlet coupling and pneumatically operated brakes of the carrier.

Tube fitting hardware 54 as needed.

Installation instructions 56.

Referring now to FIG. 5, there is depicted a further conversion kit 58 for retrofitting an anti-theft protection device of the type seen in FIG.2 to a carrier.

The kit components listed below are almost totally pre-assembled, to enable fast installation.

An openable, lockable steel case 32 attachable to the carrier by means of a flange 64 is provided for this purpose. The flange 64 can be used either for screws or for welding.

A two-way air valve 30 contained in the case 32.

Two tubing lengths 60 extending through the case 32 each ready connected at one end to the air valve 30.

Tube fitting hardware 54.

Installation instructions 62.

FIG. 6 illustrates schematically a valve which is so designed to be automatically activated. The valve 38 comprises a cylindrical tubular housing 64 having an inlet port 18 and outlet port 20, an inner core piston 66 urged by spring 68 and to which a solenoid 40 is connected. There is further provided a by-pass passage 70. The inner core piston is adopted to pivot and axially move urged by spring 68. The valve is inserted into the compressed air line of the carrier. Activation of solenoid 40 would bring core piston 66 to its "open" position as seen. The air pressure would enter by-pass 70 and hold said core 66 in its position. Alternatively to by-pass 70 an auxiliary valve could be used.

Disconnecting the air line would release the pressure consequently spring 68 will urge core 66 to a position closing passage 19 preventing air pressure reaching the brakes.

The scope of the described invention is intended to include embodiments coming within the meaning of the following claims. The foregoing examples illustrate useful forms of the invention, but are not to be considered as limiting its scope, such as location of the valve and its deployment, and the use on other vehicles, as those skilled in the art will readily be aware that additional variants and modifications of the invention can be formulated without departing from the meaning of the following claims.

WE CLAIM:

1. A wheeled load carrier or lorry provided with spring-closed pneumatically-operated brakes, said carrier being connectable to a motorized truck section, said carrier or lorry having an anti-theft protection device, which when deployed inhibits the unlocking of air-release spring-operated wheel brakes of said carrier, said device including a lockable air valve inserted into a compressed air line connecting a source of compressed air to said brakes, closure of said valve preventing air passage for release of said brakes and opening of said valve allowing passage for compressed air to release said brakes.
2. The carrier as claimed in claim 1, wherein said compressed air line is the MAXI air line.
3. The carrier as claimed in claim 1, wherein said air valve is mounted inside a lockable steel box resistant to forcible opening.
4. The carrier as claimed in claim 1, wherein said lockable valve is manually operated and is positioned for convenient access.
5. The carrier as claimed in claim 1, wherein said valve is electrically operated by a solenoid or an electric motor in both directions, and is mounted on said carrier in a hidden location.
6. The carrier as claimed in claim 1, wherein said valve is automatically activated when the air line is disconnected.
7. The carrier as claimed in claim 1, being a semitrailer.
8. A carrier with an anti-theft protection device substantially as described hereinbefore and with reference to the accompanying drawings.

9. A conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing

- * a two-way lockable air valve with valve attachment hardware ;
- * tubing for connecting said air valve between an existing air inlet fitting and pneumatically operated brakes of said carrier;
- * tube fitting hardware; and
- * installation instructions.

10. A conversion kit for retrofitting an anti-theft protection device to a carrier, said kit containing

- * an openable, lockable steel case attachable to said carrier;
- * a two-way air valve contained in said case;
- * two tubing lengths extending through said case each ready connected at one end to said air valve;
- * tube fitting hardware; and
- * installation instructions.

11. A conversion kit for retrofitting an anti-theft protection device to a carrier, substantially as described hereinbefore and with reference to the accompanying drawings.

For the Applicant

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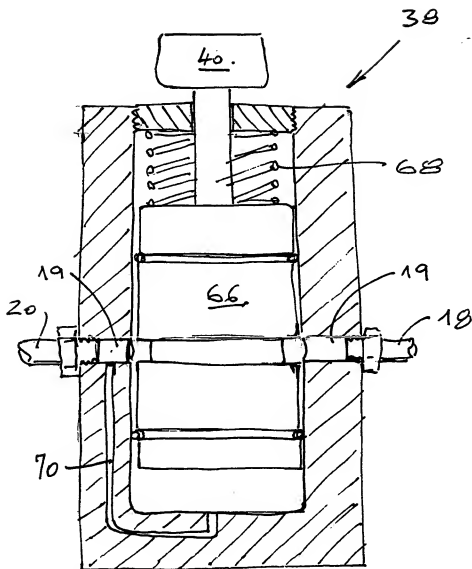


FIG. 6

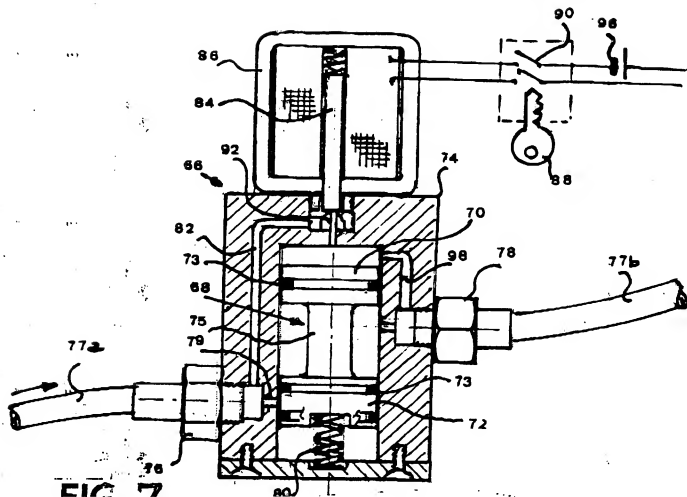


FIG. 7
FIG. 8

